ENERGY POLICY UPDATE

MARCH 3, 2014

The Energy Policy Update Electronic Newsletter is published by the Arizona Governor's Office Of Energy Policy and is provided free of charge to the public. It contains verbatim excerpts from international, domestic energy, and environment-related publications that are reviewed by Community Outreach Personnel. For inquiries, call 602-771-1143 or toll free to 800-352-5499. To register to receive this newsletter electronically or to unsubscribe, email Gloria Castro.

UPCOMING WEBINARS

State & Local Energy Efficiency Action Network Webinar: Setting Energy Savings for Utilities
Thursday, March 27, 2014
11:00 AM – 12:00 PM MST
Click here to register.

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The Arizona Republic now has limited access. As such, links may or may not work.

ARIZONA-RELATED

APS Announces $700 Million Renovation of Tempe, Ariz. Power Plant

[Mesa Tribune, Feb. 25] Mesa, AZ – An upcoming update of a power plant in Tempe by APS is expected to provide benefits ranging from new construction jobs to an improvement in the neighborhood aesthetics. The project will modernize the Ocotillo Power Plant by removing two power units built in the 1960s and replacing them with five modern units, as well as the removal of three oil storage tanks on the property. Information sent by APS states the project will cost $700 million to complete and will require the addition of more than 100 construction positions. The project is expected to last for two years, with a completion date set for 2018. Once completed, APS estimates Ocotillo's megawatt capacity to increase from 330 to 620, which also increases the number of homes it can serve from 83,000 to 165,000. The company does expect the current noise level to remain the same.

Apple Plant Plans to Use 100 Percent Renewables

[Arizona Republic, Feb. 24] Apple Inc. has shared few details regarding its supplier's factory in Mesa that will make sapphire glass for the company. But one thing the Cupertino, Calif., company has boasted since announcing the plans in November is that the plant will run on 100 percent renewable power from day one. But the details of how the factory will achieve that goal remain a mystery, and the plant is reportedly opening soon. Few buildings in the country, let alone massive factories, can claim to be "net-zero," or to produce as much electricity on site from solar or other renewable energy as they consume. Apple's plans are even less clear as to whether the tech company plans to generate all the renewable power on site, to build a renewable-energy facility elsewhere, or to simply buy renewable-energy credits, or RECs. RECs represent the environmental attributes of renewable energy, and can be bought and sold separately from the electricity produced at renewable facilities. Thus, a business in Arizona could buy RECs from a solar power plant in another state while the actual electricity from the plant is used somewhere else. Using RECs is common among large businesses that aim to support alternative energy, even among those that produce a portion of their energy on site. The New Belgium Brewing Co. in Fort Collins, Colo., is an example of a large processing facility that uses both on-site renewable energy in addition to RECs to make the claim it is powered 100 percent by renewable energy.

Ariz. Expected to Have Nation's Second-Fastest Job Growth in 2014
[Arizona Daily Star, Mar. 2] WASHINGTON — Arizona is expected to post the second-highest rate of job growth among states in 2014, trailing only booming North Dakota, according to a recent report. The U.S. Regional Outlook 2014 by Moody's Analytics predicts Arizona will see a 3.1 percent increase in jobs this year, compared to a national average of just under 1.9 percent. North Dakota's outlook leads all states at 3.6 percent job growth. Economists said the higher growth rate is a return to the norm for Arizona, which routinely ranked among the top states before being hammered in the recession.

'Big Data' Advances Could Help Solve Health, Energy Challenges
[ASU News, Feb. 24] Two teams of Arizona State University computer science researchers are working to develop the next generations of data-driven predictive systems to improve our ability to respond to epidemics and more effectively manage buildings and their energy systems. Both teams are led by K. Selçuk Candan, a professor in the School of Computing, Informatics, and Decision Systems Engineering, one of the ASU's Ira A. Fulton Schools of Engineering. Candan has been awarded two National Science Foundation (NSF) grants to support the research, as well as a grant from Johnson Controls, Inc., a global company that provides products and services to optimize building operations, including energy systems. His team is striving to devise better ways to analyze, integrate and index large volumes of data that will be used to produce simulations. Researchers use the simulations to derive accurate information and predictions necessary to design more effective systems.

Electrifying Prospects: Yavapai College Students Amped About 'Get Into Energy' Event
[Prescott Daily Courier, Mar. 3] Saturday's "Get into Energy" event at the Career and Technical Education Center (CTEC) in Prescott offered students and community members a unique opportunity to explore the school's varied programs. Guests were able to experiment with robotics, learn about utility pole climbing, and meet with local employers. Free food, prizes and two $1,000 Yavapai College Foundation scholarships were also available. Yavapai College Career and Technical Education (CTE) Associate Dean Karla Phillips said the event offered a chance for the college to create interest and awareness in CTE programs related to energy and how those programs can lead to well-paying industry careers.

Leaders Discuss Arizona's New Energy Plan at Solar Summit
[ASU News, Feb. 24] Policy leaders, industry partners and energy experts gathered at ASU SkySong Feb. 20 to discuss the future of solar energy in Arizona at Arizona Solar Summit IV. The event featured the first public unveiling of the state's new master energy plan, "emPOWER Arizona: Executive Energy Assessment and Pathways." Gov. Jan Brewer signed the executive order on Feb. 18, making it the state's first comprehensive energy plan in more than 20 years. The Arizona Solar Summit – hosted by Arizona State University LightWorks, ASU SkySong and the Sandra Day O'Connor College of Law, and sponsored by NRG – provided the first opportunity for the public to learn about the master plan. Leisa Brug, Brewer's energy policy advisor and director of the Governor's Office of Energy Policy, led a panel discussion on the plan and its goals. Brug said that Arizona is already ahead of other states in terms of energy policy, and the new master plan will help the state continue to be a national leader in the field.

New Mexico, Arizona, Nevada in Running for $5 Billion Tesla Factory
[USA Today, Feb. 26] Tesla Motors said on Wednesday that four states are in contention for a massive new $5 billion plant to build batteries for its next generation of electric cars. The electric-car maker released details of its plans for a plant capable of making batteries for 500,000 cars a year and employing up to 6,500 workers. Tesla says that Nevada, Arizona, Texas and New Mexico are finalists for the plant, which would be powered largely by wind and solar energy. It says the plant would occupy up to 1,000 acres and that it is planned to start producing by 2017. Tesla didn't pinpoint potential sites in those states, but the RenoGazette-Journal reported last week that Tesla is

interested in a site near Reno-Stead Airport and the Tahoe Reno Industrial Center. It would be the closest location to Fremont, Calif., where Tesla makes its electric cars. Although other automakers have built plants for lithium-ion battery production, Tesla is talking about a plant on a grand scale -- and a scale that could make batteries cheaper.

ALTERNATIVE ENERGY & EFFICIENCY

Building Code Energy Efficiency Dollar Savings

[Fierce Energy, Feb. 28] New research from Pacific Northwest National Laboratory (PNNL) quantifies the financial savings from increased energy efficiency through building codes by evaluating the federal funding for the Energy Department's Building Energy Codes Program, and comparing it to the energy savings over the past two decades. For every $1 the DOE spent on building energy codes, $400 in energy cost savings resulted, according to PNNL. The program was started in 1992 in response to the Energy Policy Act of 1992, which requires DOE to participate in the development of national building energy codes and standards. While the program received about $110 million in federal funding between 1992 and 2012, its efforts resulted in about $44 billion in energy cost savings, PNNL found. Those savings come from reducing national energy use by 4.8 quads or enough to power nearly 130 million U.S. homes for one year.

Developing the World's First Magma-Enhanced Geothermal System

[Power Magazine, Mar. 1] In 2009, when the first borehole in a series of wells was drilled as part of the Icelandic Deep Drilling Project (IDDP) in Krafla, northeast Iceland (Figure 5), it unexpectedly penetrated into magma with a temperature of between 900C and 1,000C at a depth of only 2,100 meters (m). Further investigation of the borehole, IDDP-1, has led to the development of a unique geothermal project that supplies heat directly from magma. "Drilling into magma is a very rare occurrence anywhere in the world, and this is only the second known instance, the first one, in 2007, being in Hawaii," noted Wilfred Elders, a professor emeritus of geology at the University of California, Riverside who edited a special issue of the international journal *Geothermics* that was dedicated to the scientific and engineering findings arising from a two-year-long observation period at the unique borehole. Bearing part of the substantial costs involved, the IDDP—comprising HS Energy, Reykjavik Energy, Iceland's National Power Co., and the National Energy Authority of Iceland—pumped cold water into the hole to fracture rock near the magma and create high permeability. Next, they cemented a steel casing into the well that was perforated in the bottom section closest to the magma. Then, they allowed the hole to heat slowly. Eventually, high-pressure steam at temperatures of more than 450C, a measured output that was sufficient for 36 MW, was allowed to flow out of the hole for two years until July 2012, when it was closed due to a valve failure. According to Elders, the feat of being able to drill down into the magma despite difficulties—and to control it—is impressive. Perhaps more importantly, the well, which created a world record for geothermal heat, produced steam (Figure 6) that could be fed directly into National Power's 60-MW Krafla geothermal power plant near the Krafla Volcano. The team was also able to cope with a "difficult chemical composition of steam" from the well with "simple countermeasures."

First Solar Sets World Record for Cdte Solar Cell Efficiency

- *20.4 Percent Research Cell Certified at Newport Lab and Confirmed at NREL*
- *Achievement capitalizes on First Solar/GE technology partnership*
- *Performance matches long-standing mSi record*

[Business Wire, Feb. 25] Tempe, AZ & Perrysburg, OH – First Solar, Inc. (Nasdaq: FSLR) today announced it has set a world record for cadmium-telluride (CdTe) photovoltaic (PV) solar cell conversion efficiency, achieving 20.4 percent conversion efficiency certified at the Newport Corporation's Technology and Applications Center (TAC) PV Lab and confirmed by the U.S. Department of Energy's National Renewable Energy Laboratory (NREL). The record-setting cell was constructed at the company's Perrysburg, Ohio factory and Research & Development Center. This certified result bests the previous record of 19.6 percent conversion efficiency set by GE Global

Research in 2013. Last April, First Solar and GE announced a solar technology partnership in which First Solar acquired GE's CdTe solar intellectual property and secured a collaborative research partnership with GE's R&D team. The partnership was formed to accelerate innovation in PV technology and accelerate solar module performance at manufacturing scale.

Iberdrola-Backed AlgaEnergy May Build Mexico Biomass Plant

[Bloomberg, Feb. 26] AlgaEnergy SA, part-owned by Spain'sIberdrola SA (IBE) and Repsol SA (REP), is in talks with potential partners to set up a plant in Mexico to supply the American markets with biomass made from algae. Chief Executive Officer Augusto Rodriguez-Villa will travel to Mexico next week to meet executives from local companies to discuss a joint venture to build a 1-million liter biomass plant running on microalgae, he said in an interview. "We want to gain a foothold in Mexico to expand in Latin America and the U.S. from there," Rodriguez-Villa said by phone yesterday from Madrid, where AlgaEnergy is based. "The joint venture will get our knowledge and our future partner will finance setting up the first production plant." The International Energy Agency, a policy adviser for industrialized nations, estimates biofuels must supply about 27 percent of road fuels worldwide by 2050, up from 3 percent in 2012, to reduce crude-oil dependence and carbon emissions. Biofuels from edible crops like corn have been blamed for food shortages, spurring interest in algae, which doesn't take up agricultural land and can be made using wastewater.

Stanford Scientist Unveils 50-State Plan to Transform U.S. to Renewable Energy

Mark Jacobson and his colleagues have created a 50-state roadmap for replacing coal, oil and natural gas with wind, water and solar energy.

[Stanford News, Feb. 26] Stanford University scientist Mark Jacobson has developed a 50-state roadmap for transforming the United States from dependence on fossil fuels to 100 percent renewable energy by 2050. He unveiled the plan at the annual meeting of the American Association for the Advancement of Science in Chicago. "Drastic problems require drastic and immediate solutions," said Jacobson, a professor of civil and environmental engineering. "Our new roadmap is designed to provide each state a first step toward a renewable future." The motivation for the 50-state plan, he said, is to address the negative impacts on climate and human health from widespread use of coal, oil and natural gas. Replacing these fossil fuels with clean technologies would significantly reduce carbon dioxide emissions that contribute to global warming and spare the lives of an estimated 59,000 Americans who die from exposure to air pollution annually, he said.

US Electricity Use Declines, Says ACEEE

[Energy Manager Today, Feb. 26] US electricity sales peaked in 2007 and have been declining modestly since then. Sales in 2012 were 1.9 percent lower than 2007 sales, and sales in the first ten months of 2013 are below the same period in 2012, according to a blog posting by Steven Nadel, executive director of the American Council for an Energy-Efficient Economy. ACEEE conducted an analysis on electricity-use trends since 1993, particularly at changes in sales over the 2007-2012 period and found that no single factor can explain the change in electricity use over the 1993-2012 period. The factors that appear most significant were energy efficiency programs and policies, warmer weather, changes in gross domestic product (GDP), changes in electricity prices, and long-term trends.

ENERGY/GENERAL

Gas Consumption Plummets as Renewable Generation Goes Up

[Fierce Energy, Feb. 28] Genscape is reporting that renewable generation was up 30 percent for the week ending February 20, 2014, while gas consumption plummeted 35 percent as a result of the increase in renewables and weaker power demand. According to Genscape estimates, the total weekly generation of 11,982 GWh was the second highest weekly number in the past five years. It was an active week for wind, with gusty

southerly winds early in the period and strong northerlies on the back side of a very strong cold front to end the week. Wind generation in the Midwest is a significant driver of the increase week-over-week. Midcontinent ISO wind was up 31 percent, Southwest Power Pool wind was up 117 percent, and ERCOT wind was up 129 percent. Genscape reports that hydro generation in the Pacific Northwest was also up 39 percent, despite ongoing drought conditions.

Molten Salts Might Provide Half-Price Grid Energy Storage

A startup, Halotechnics, is building a pilot electricity storage system that will use molten salt.

[MIT Tech Review, Feb. 27] A small startup based in Emeryville, California, will build a pilot-scale energy storage system that could provide a cheaper, more practical way of storing large amounts of electricity and help enable the power grid accommodate large amounts of renewable energy. Halotechnics has announced a deal with a partner to construct a one-megawatt plant that will store energy in molten salts—a technique previously used to store energy at some large solar thermal plants. The company says it will cost half as much as battery storage, and could compete with the cheapest way of storing large amounts of electricity—pumping water up a hill and using it to drive a turbine as gravity brings it back down. Molten salt storage is less efficient than battery storage—only about 70 percent of the energy used to heat up the salts becomes electricity again, whereas batteries can be over 90 percent efficient. So Halotechnics will need to offset that inefficiency with low costs. The company's energy storage technology is made possible using molten salts discovered using a high-throughput screening system built to discover new materials. Energy storage is becoming ever more important as the share of variable sources of energy like solar and wind power increases. The technology is one of several large-scale energy storage technologies being showcased this week at the Advanced Research Projects Agency for Energy Summit (see "ARPA-E's Strategy for Survival") in Washington, D.C.

Report Calls for Better Backstops to Protect Power Grid from Cyberattacks

[New York Times, Mar. 2] WASHINGTON — Despite rising anxiety over the possibility of a cyberattack on the power grid, the industry and government are not set up well to counter the threat, according to a report produced by leading energy security experts. Companies are reluctant to share information with one other, a critical step in reducing vulnerability, because they are afraid of being accused of failing to comply with cybersecurity rules, committing antitrust violations or giving away proprietary information, the report found. And the federal rules intended to protect the electric system from cyberattack are inadequate because they do not give companies an incentive to continually improve and adapt to a changing threat, according to the report, which was released on Friday. The report was produced by the Bipartisan Policy Center, a Washington nonprofit group, and led by Michael V. Hayden, the former director of the C.I.A.; Curt Hébert Jr., a former chairman of the Federal Energy Regulatory Commission; and Susan Tierney, a former assistant secretary of energy and former utility regulator in Massachusetts. The experts also found that while the government had focused on the high-voltage power grid, less work has been done on the lower-voltage distribution system, which could cause problems that would propagate up the chain.

INDUSTRIES AND TECHNOLOGIES

EETD's Rapid Building Energy Modeler (RAPMOD) at the ARPA-E Technology Showcase

[Berkeley Lab – EETD, Feb. 2014] The ARPA-E Energy Innovation Summit opens today in Washington D.C., bringing together researchers from academia, business, and government to advance energy technology innovation. The Technology Showcase at the Summit presents America's next generation of transformational energy technologies. The Environmental Energy Technologies DIvision of Lawerence Berkeley National Laboratory (Berkeley Lab) and partners are developing a portable system of sensing and computer hardware to rapidly generate indoor thermal and physical building maps. Using cameras

and laser scanners, the team will create a 3D visualization of walls, windows, floors, and other parts of buildings and use a computer model to predict how much energy the building should use. These cameras and scanners are mounted on a backpack, allowing a person to walk through and record the interior of an entire building. Berkeley Lab is collaborating with the University of California, Berkeley and Baumann Consulting on the project. The portable Rapid Building Energy Modeler (RAPMOD) 3-D indoor mapping system transforms conventional approaches to energy analysis by automating the mapping of existing buildings and streamlining integration with energy simulation tools. This breakthrough approach uses backpack-mounted technology, including laser scanners and optical and infrared cameras, to provide a better, cheaper, faster way of generating computer models of buildings that can be used to enable more energy-efficient operation or to identify deeper retrofit opportunities. Data needed for energy modeling and simulation can be captured in a single walk-through by a relatively unskilled operator. The resulting 3-D model and accompanying data are then imported into DOE's EnergyPlus or another energy simulation tool. This enables ESCOs, architects, engineering firms, and utilities to rapidly assess problem areas, identify energy-efficiency opportunities and occupant comfort, and pursue a course of action. The new process is significantly quicker and costs less than current manual data-gathering methods.

Musk's $5 Billion Tesla Gigafactory May Start Bidding War

[Bloomberg, Feb. 27] Tesla Motors Inc. (TSLA)'s plan to build what co-founder Elon Musk bills as the world's largest battery factory could shake up the power industry and trigger a bidding contest between states eager for the 6,500 jobs the $5 billion investment could create. The luxury electric-car maker announced yesterday that it's selling at least $1.6 billion of convertible notes to finance the project and exploring locations in Texas, Nevada, Arizona and New Mexico for a 10 million-square-foot facility. Tesla declined to comment on whether any negotiations had begun. "This would rank as the most attractive industrial project out there," said Dennis Cuneo, president of DC Strategic Advisors LLC and a former Toyota Motor Corp. executive who helped that carmaker select manufacturing sites. Tesla has dubbed the project the "gigafactory," and it would make Musk a force in both U.S. manufacturing and electric power. The plant he envisions would have more capacity than any other to make lithium-ion batteries.

LEGISLATION AND REGULATION

EPA Sets New Vehicle Emission, Fuel Standards

[Reuters, Mar. 3] The U.S. Environmental Protection Agency on Monday announced new fuel and automobile rules, known as Tier 3 standards, that aim to cut soot, smog and toxic emissions from cars and trucks. The standards are expected to reduce tailpipe and evaporative emissions from cars, light trucks, medium-duty passenger vehicles and some heavy-duty vehicles. The allowable sulfur content of U.S. gasoline will also be reduced. The tailpipe standards will include phase-in schedules that vary by vehicle class but generally will start between model years 2017 and 2025, the EPA said.

NREL Examines Solar Policy Pathways for States

[NREL.gov, Feb. 26] The Energy Department's National Renewable Energy Laboratory (NREL) has published a report that aligns solar policy and market success with state demographics. By organizing the 48 contiguous states into four peer groups based on shared non-policy characteristics, the NREL research team was able to contextualize the impact of various solar policies on photovoltaic (PV) installations. "Although it is widely accepted that solar policies drive market development, there has not been a clear understanding of which policies work in which context," lead author Darlene Steward said. "This study provides much-needed insight into the policy scope and quality that is needed to spur solar PV markets across the United States." The report, "The Effectiveness of State-Level Policies on Solar Market Development in Different State Contexts," includes statistical and empirical analyses to assess policy impacts….

Shaheen-Portman Rises Again
[Feb. 28] A new version of the Energy Savings and Industrial Competitiveness Act was introduced Thursday by Sens. Jeanne Shaheen (D-NH) and Rob Portman (R-Ohio). The latest version of the Shaheen-Portman bill includes a requirement for the Office of Management and Budget to collaborate with federal agencies to promote energy efficiency in data centers. The new bill also would establish a voluntary Tenant Star certification and recognition program to promote energy efficiency in leased commercial building space during design and occupancy.

WESTERN POWER

ERCOT Report Empowers Fans of Texas' Current Electricity Market
[Austin Business Journal, Mar. 3] Summer electricity demand could increase by more than 8,400 megawatts for the majority of Texas by 2021, according a report released by Electric Reliability Council of Texas Friday. That's not nearly as bad as older forecast models showed, which means the momentum to shift Texas' electric market away from its current energy-only structure will continue to lose steam. Peak demand is measured on the hottest summer day with all the state's emergency protocols like demand response and calls for conservation working at full strength. But the amount of wind and natural gas power will also grow right alongside it, mostly with new wind and natural gas power. ERCOT's 10-year Capacity Demand and Reserve report shows load forecasts won't be nearly as bad as the dire predictions that have come in the past. This is the first power forecast to use the new methodology that looks at population growth, new home construction and weather.

Los Angeles Bans Fracking!
[SustainableBusiness.com, Mar. 3] On Friday, the Los Angeles City Council voted unanimously for a moratorium on fracking. Now it goes to the city's attorney for zoning changes and then back to the city council for a final vote. That followed news from Texas that Exxon's CEO joined a lawsuit to block fracking equipment near his house, and Denton, a city in the cross-hairs of fracking - got a referendum on the ballot to ban it. Weeks before there was an enormous rally in Maryland, where more than 80,000 people protested a liquefied natural gas plant that would open the door to exports.

Silicon Valley Residents Asked to Use 20% Less Water - But How?
[NBC Bay Area, Feb. 26] Now that 2 million customers in Silicon Valley have officially been asked to take shorter showers, cut down on watering their lawns and reduce their water consumption, the question is: How? On Tuesday night, the Santa Clara Valley Water District board voted unanimously to call for mandatory measures to reach a water use reduction target of 20 percent through December. In doing so, the district became one of 23 cities and water districts that have issued mandatory conservation restrictions, and at least 77 agencies that have called for voluntary efforts in light of Gov. Jerry Brown's request, according to Lisa Lien-Mager, spokeswoman for the Association of California Water Agencies. (*See interactive map below*)
Map: Status of Response to 2014 Drought

ARIZONA STATE INCENTIVES/POLICIES

ARIZONA COMMERCE AUTHORITY (ACA)

- Angel Investment Tax Credit Program **-** The main objective of the Angel Investment program is to expand early stage investments in targeted Arizona small businesses. The program accomplishes this goal by providing tax credits to investors who make capital investment in small businesses certified by the Arizona Commerce Authority (ACA). To view the list of businesses that have been certified under this program please click here. LEARN MORE

- Arizona Innovation Accelerator Fund - The Arizona Innovation Accelerator Fund Program is an $18.2 million loan participation program funded through the U.S. Department of Treasury's SSBCI and managed by the Arizona Commerce

Authority. The goal of this program is to stimulate financing to small businesses and manufacturers, in collaboration with private finance partners, to foster business expansion and job creation in Arizona. LEARN MORE

- Arizona Innovation Challenge - The Arizona Innovation Challenge is an investment in the minds of talented entrepreneurs in Arizona and around the world. The ACA will award $1.5 million to the most promising technology ventures that participate in the Challenge (awards may range from $100,000 to $250,000).
  LEARN MORE

- AZ Fast Grant - Enables Arizona-based technology companies to initiate the commercialization process. Total funds available for this grant round are $175,000. Maximum awards of $5,000 and $20,000 will enable companies to accomplish one of four scopes of work. LEARN MORE

- AZ Step Grant - Grant funding from the U.S. Small Business Administration (SBA) with matching funds contributed by the Arizona Commerce Authority (ACA) offering a number of services and tools to Arizona small businesses as they go global for the first time with sales or enter new, international markets.
  LEARN MORE

- Commercial/Industrial Solar Energy Tax Credit Program - The primary goal of the Commercial/Industrial Solar Energy Tax Credit Program is to stimulate the production and use of solar energy in commercial and industrial applications by subsidizing the initial cost of solar energy devices. The program achieves this goal by providing an Arizona income tax credit for the installation of solar energy devices in Arizona business facilities. LEARN MORE

- Healthy Forest - The primary goal of the Healthy Forest Enterprise Incentives Program is to promote forest health in Arizona. The program achieves this by proving incentives for certified businesses that are primarily engaged in harvesting, processing or transporting of qualifying forest products. LEARN MORE

- Job Training Program offers job-specific reimbursable grants for employers creating new jobs or increasing the skill and wage level of their current employees. Deadline: Year Round. LEARN MORE

- Renewable Energy Tax Incentive Program offers a refundable income tax credit and property tax reduction to companies in solar, wind, geothermal and other renewable energy industries who are expanding or locating a manufacturing or headquarters operation in Arizona. The tax credit is up to 10% of the total qualified investment amount and the property tax benefit can reduce a company's property taxes by up to 75%. Deadline: Year Round. LEARN MORE

- Research and Development Tax Credit is an Arizona income tax credit for increased research and development activities conducted in this state. Starting in 2010, a qualifying company may be eligible to claim a partial refund of its current year excess R&D credit. Applicants may apply at the end of their tax year but prior to filing a tax return with Revenue. LEARN MORE

Quality Jobs Tax Credit Program - The primary goal of the Quality Jobs Tax Credit program is to encourage business investment and the creation of high-quality employment opportunities in the state. The program accomplishes this goal by providing tax credits to employers creating a minimum number of net new quality jobs and making a minimum capital investment in Arizona. LEARN MORE

- **Bonds Administered by the Arizona Commerce Authority**
  - Private Activity Bonds (PAB) - Tax exempt bond financing, for federal purposes, offers an alternative financing mechanism for certain projects. LEARN MORE
  - Qualified Energy Conservation Bonds (QECB) - Tax credit bonds are available as an alternative financing mechanism for certain green projects. LEARN MORE

- **Federal Programs**
  - **Small Business Innovation Research (SBIR) Program -** SBIR is a competitive program that encourages small businesses to explore their technological potential, as well as, providing incentive to profit from its commercialization. LEARN MORE
  - **Small Business Technology Transfer (STTR) Program** - STTR is an important small business program that expands funding opportunities to meet the nation's scientific and technological challenges in the 21st century. LEARN MORE
  - **Work Opportunity** - The Work Opportunity Tax Credit (WOTC) is a federal tax credit of up to $9,000 that Congress provides to private-sector businesses for hiring individuals from nine target groups who have consistently faced significant barriers to employment. LEARN MORE

- Pollution Control Tax Credit - Provides a 10 percent income tax credit on the purchase price of real or personal property used to control or prevent pollution.

- Renewable Energy Production Tax Credit - An income tax credit awarded to utility-scale generation systems based on the amount of electricity produced annually for a 10-year period using solar or wind energy. Questions can be directed to Georganna Meyer (602-716-6927) or Elaine Smith (602-716-6924).

- **Sales Tax Exemption for Machinery and Equipment**
  Exemptions are available for:

  1. Machinery or equipment used directly in manufacturing, see ARS 42-5159(B)(1).
  2. Machinery, equipment or transmission lines used directly in producing or transmitting electrical power, but not including distribution, see ARS 42-5159(B)(4).
  3. Machinery or equipment used in research and development, see ARS 42-5159(B) (14).

Questions can be directed to Christie Comanita (602-716-6791).

- Solar Liquid Fuel Tax Credit - Income tax credits are available for research and development, production and delivery system costs associated with solar liquid fuel. Questions can be directed to Georganna Meyer (602-716-6927) or Elaine Smith (602-716-6924).

- Database of State Incentives for Renewables and Efficiency (DSIRE)
  - Arizona Incentives/Policies
  - Federal Incentives/Policies
  - Solar Policy News - DSIRE provides summaries of current solar policy developments and an archive of past solar policy developments. Current solar news appears below the news archive, which is searchable by several criteria.

GRANTS

The following solicitations are now available:
(Click on title to view solicitation)

- NEW! Solar Manufacturing Technology 2 (SolarMat 2) - Concept Paper Submission Deadline: 3/12/2014 5:00 PM ET. Full Application Submission Deadline: 4/30/2014 5:00 PM ET
- Sunshot Incubator Program Round 9 - Close Date: March 13, 2014
- National Incubator Initiative for Clean Energy (NIICE) - Close Date: March 21, 2014
- Next Generation Photovoltaic Technologies III - Close Date: March 24, 2014
- FY 2014 Vehicle Technologies Program Wide Funding Opportunity Announcement - Close Date: April 1, 2014
- Renewable Carbon Fibers - Concept Papers Submission Deadline: 03/03/2014 at 5:00 P.M. Eastern Standard Time. Submission Deadline for Full Applications: 04/11/2014 at 5:00 P.M. Eastern Standard Time
- Geothermal Play Fairway Analysis - Close Date: April 11, 2014
- U.S. Wind Manufacturing: Taller Hub Heights to Access Higher Wind Resources and Lower Cost of Energy - Close Date April 14, 2014
- Building Energy Efficiency Frontiers and Incubator Technologies (BENEFIT) - 2014 - Close Date April 21, 2014
- NEW! Clean Energy Manufacturing Innovation Institute for Composites Materials and Structures - Close Date: April 22, 2014
- Integrated Enhanced Geothermal Systems (EGS) Research and Development - Close Date April 30, 2014
- Low Temperature Geothermal Mineral Recovery Program - Close Date May 2, 2014
- NEW! Bioenergy Technologies Incubator - Close Date: May 23, 2014
- Advanced Fossil Energy Projects - Solicitation Number: DE-SOL-0006303 - Expiration Date 11/30/2016
- Sunshot "Race to the Roof" Initiative - Registration Due October 31,2014
- Repowering Assistance Program – Ongoing
- Rural Business Enterprise Grants - Ongoing
- Rural Business Opportunity Grants – Ongoing
- Sustainable Agriculture Research and Education Grants - Ongoing
- Renewable Energy RFP's - Solicitations for Renewable Energy Generation, Renewable Energy Certificates, and Green Power – Various Deadlines
- U.S. Dept. of Agriculture - Rural Development Grant Assistance

ENERGY-RELATED EVENTS

2014

- Solar PV Trade Mission Mexico
  March 3-7, 2014 Mexico City, MEXICO
- NARUC – Current Issues
  March 9-12, 2013 Santa Fe, NM
- Solar O&M North America
  March 25-26, 2014 San Francisco, CA
- Clean Tech Future Conference III
  April 9, 2014 Phoenix, AZ
- International Geothermal Energy Forum
  April 23-24, 2014 Washington, DC
- 11th Annual Construction in Indian Country Nat'l., Conference
  April 28-30, 2014 Chandler, AZ
- VerdeXchange Arizona
  April 30-May 2, 2014 Phoenix, AZ
- AWEA Windpower 2014
  May 5-8, 2014 Las Vegas, NV
- Beyond the Border: Arizona Trade Mission to Mexico City & Guadalajara
  May 12-16, 2014
- Sunshot Grand Challenge Summit 2014
  May 19-22, 2014 Anaheim, CA
- Native American Economic Development & Energy Projects Conference
  June 16-17, 2014 Anaheim, CA
- 32nd Annual West Coast Energy Management Congress
  June 25-26, 2014 Seattle, WA
- National Geothermal Summit
  August 5-6, 2014 Reno, NV
- Geothermal Energy Expo
  September 28-October 1, 2014 Portland, OR
- ASU Sustainability Series Events
- Green Building Lecture Series
  Granite Reef Senior Center Scottsdale, AZ